

Betty Levi

Plant Protection and Inspection Services (PPIS)

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August 23, 2020

Re: **MICROBIOLOGICAL TEST OF SEEDS**

Official sample No. 47102-2020/2

Certificate import no. 00368-2020

Sample Details:

Sample:	Tomato seeds LYCOPERSICON ESCULENTUM	Lab ID:	5440
Variety:	FORTAMINO	Seeds origin:	GUATEMALA
Lot No.	5.761.507 (6.020.956)	Name of official Sampler:	Betty Levi
Weight of sample:	26gr	Seed owner:	Efal Chemicals
Weight of shipment:		Date sampled: 11.08.2020	Date Received: 12.08.2020

Tested for:	Results:
Pseudomonas syringae pv. tomato-2 replicates of 5000 seeds	Negative
Pseudomonas corrugata -2 replicates of 5000 seeds	Negative
Clavibacter michiganensis subsp. michiganensis -2 replicates of 5000 seeds	Negative
Erwinia carotovora -2 replicates of 5000 seeds	Negative
Xanthomonas vesicatoria -2 replicates of 5000 seeds	Negative
Tobamoviruses (TMV, ToMV, ToMMV, ToBRFV)-12 replicates of 250 seeds each, by the Bioassay method.	Negative
Tomato black ring nepovirus -1 replicate of 250 seeds	Negative
Tomato ringspot nepovirus -1 replicate of 250 seeds	Negative
Tomato bushy stunt tombusvirus-1 replicate of 250 seeds	Negative
Pelargonium zonate spot virus-1 replicate of 250 seeds	Negative
Pospiviroids (CEVd, CLVd, MPVd, PCFVd, PSTVd, TASVd, TCDVd and TPMVd) - 3 replicates of 1000 seeds each by the PCR method.	Negative
Fusarium oxysporum f.sp. lycopersici - 400 seeds	Negative
Pepino Mosaic Virus (PepMV) -12 replicates of 250 seeds each by the ELISA method.	Negative

Tested for:	Results:		
	CT28	Menzel	Remarks
Tomato Brown Rugose Fruit Virus (ToBRFV) - 12 replicates of 250 seeds each then unifying each 4 replicates to make 3 final replicates, by the PCR method.	Ct ₁ =34.00 Ct ₂ =32.10 Ct ₃ =34.60	Ct ₁ =32.70 Ct ₂ =30.80 Ct ₃ =33.50	Positive*
Negative control	Ct=N/A	Ct=38.70	
Positive control	Ct=29.60	Ct=29.20	

Lab ID 5440:

The tests were performed according to:

S.O.P 50: "Testing seeds for viruses by the ELISA method".

Kit: **PepMV**: Prime, Lot: P81886/ P81915, Ex: 02/21

S.O.P 54: "Testing Tomato and Pepper seeds for Pt, Pc, Xv, Cmm, Er".

S.O.P 56: "Detection of infectious Tobamoviruses in tomato and pepper plants and seeds" according to: ISTA 7-028 (2019), ISHI-Veg (Sep 2019) "Detection of Infectious Tobamoviruses in Tomato seed" and "Detection of Infectious Tobamoviruses in Pepper seed".

S.O.P 80: "Detection of Viroid from the Pospiviroid group including Potato Spindle Tuber Viroid (PSTVd) in plants and seeds by RT-PCR or qPCR method".

"REFERENCE PROTOCOL NAKTUINBOUW: Real-time RT-PCR (RT TaqMan PCR) for pospiviroids (CEVd, CLVd, MPVd, PCFVd, PSTVd, TASVd, TCDVd and TPMVd) on seeds of tomato (*Solanum lycopersicum*)" by Naktuinbouw, 2014

S.O.P 83: "Detection of Fungi in seeds for: *Pythium* spp., *Phytophthora* spp., *Fusarium* spp., *Rhizoctonia* spp., *Verticillium* spp., *Lasiodiplodia* spp., *Cylindrocladium* spp., *Myrothecium* spp., *Didymella* spp., *Phoma* spp., *Colletotrichum* spp., *Alternaria* spp., *Stemphylium** spp., *Pestalotia* spp., *Rhizopus* spp., *Penicillium* spp., *Aspergillus* spp., *Diplodia* spp., *Helminthosporium* spp., *Drechslera* spp., *Bipolaris* spp., *Septoria* spp., *Cladosporium* *spp., *Macrophomina* sp., *Phacidiopycnis* spp., *Neofabraea* spp., *Urocystis cepulae*, *Sclerotium cepivorum*, *Sclerotinia* spp., *Botryosphaeria* spp., *Botrytis* spp., *Ascochyta* sp." S.O.P 103: "Detection of viruses in Solanacea seeds".

Comments:

*According to regulation requirements as described at ISHI-Veg (March 2020) and at S.O.P 56. RNA fragments of ToBRFV could be found. A $Ct \leq 33.50$ considered as positive $Ct=32 \pm 1.5$ (protocol attached).

1. Transportation: The sample was received in the laboratory without any means of protection from temperature changes.

2. Treatment: not indicated.

3. ISRAC is not responsible for the testing results conducted by the laboratory and the laboratory's accreditation is not considered as an approval of ISRAC or different party related to the assessed.

4. This document must be referred to entirely and copying of any part of it to other documents is forbidden.

5. The protocols are not valid for coated/pelleted seeds

6. The data in this certificate reflect results that are valid for analyzed samples only as received in the lab.

7. The test performed is under certification to ISO/IEC 17025 standard

Final results are the PPIS representative responsibility.

End of certificate.

Sincerely yours,

Isaac Assouline,

Head, Microlab Laboratories (99) LTD.